

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (Currently Amended) In a spread spectrum, chip synchronous CDMA communication system, a method of improving quality of services (QoS), increasing range of coverage and increasing traffic capacity wherein the spread spectrum, chip-synchronous CDMA communication system includes a multiplicity of user channels, each user channel including digital quadrature (I, Q) channels and a common multiplexer for the I, Q channels, the method comprising:

receiving from an external source, a set of chip-synchronous CDMA signals to be transmitted;

separately multiplexing the I channels and the Q channels into two separate constant-envelope baseband signals;

selecting, on a chip-by-chip basis, the polarity of the I and Q chips including the multiplexer output baseband signal;

baseband filtering both constant-envelope baseband signals to produce baseband-filtered signals;

upconverting both baseband filtered signals to radio frequency (RF);

combining both upconverted signals in quadrature at RF; and

broadcasting the upconverted baseband filtered signals at RF.

2. Canceled.

3. (Previously Presented) The method of claim 1, further comprising:

receiving from an external source a commanded RF power distribution among the chip-synchronous CDMA signals to be transmitted.

4. (Previously Presented) The method of claim 1, further comprising:  
selecting the instantaneous multiplex algorithm to achieve a commanded RF  
power distribution among the signals to be transmitted.
5. Canceled.
6. (Previously Presented) The method of claim 1, further comprising:  
generating two digital baseband signals consisting of the sequences of I and Q  
chips generated by the multiplexer.
7. (Currently Amended) In a spread spectrum, chip-synchronous CDMA  
communication system, an apparatus for improving quality of service (QoS), increasing  
range of coverage and increasing traffic capacity wherein the spread spectrum, chip-  
synchronous CDMA communication system includes a multiplicity of user channels,  
each user channel including digital quadrature (I, Q) channels and a common multiplexer  
for the I, Q channels, the apparatus comprising:  
a receiver for receiving from an external source a set of chip-synchronous CDMA  
signals to be transmitted;  
a polarity selector for selecting, on a chip-by-chip basis, the polarity of the I and  
Q chips including the multiplexer output baseband signal;  
a multiplexer for separately multiplexing the I channels and the Q channels into  
two separate constant-envelope baseband signals;  
baseband filter for baseband filtering both ~~said~~ the constant-envelope baseband  
signals to produce baseband-filtered signals;  
an upconverter for upconverting both baseband filtered signals to radio frequency  
(RF); and  
a combiner for combining both upconverted signals in quadrature at RF; and  
broadcasting the upconverted baseband filtered signals at RF.

8. Canceled.

9. (Previously Presented) The apparatus of claim 7, further comprising:  
a receiver for receiving from an external source a commanded RF power  
distribution among the chip-synchronous CDMA signals to be transmitted.

10. (Previously Presented) The apparatus of claim 7, further comprising:  
a selector for selecting the instantaneous multiplexer algorithm to achieve  
commanded RF power distribution among the signals to be transmitted.

11. Canceled.

12. (Previously Presented) The apparatus of claim 7, further comprising:  
a generator for generating two digital baseband signals consisting of the  
sequences of I and Q chips generated by the multiplexer.

13. (Currently Amended) In a CDMA communication system having a  
multiplicity of user data channels each user data channel including quadrature (I, Q)  
channels and a common multiplexer for the I, Q channels, the system for enhancing  
quality of service (QoS) and increasing traffic capacity comprising:

a set of chip-synchronous CDMA signals to be transmitted, the signals being  
received from an external source;

a polarity selector for selecting, on a chip-by-chip basis, the polarity of the I and  
Q chips including the multiplexer output baseband signal;

a baseband filter for baseband filtering the I, Q channels after constant envelope  
multiplexing by the multiplexer; and

an upconverter for upconverting the baseband filtered signals and broadcasting  
the upconverted baseband filtered signals at RF.

14. (Currently Amended) In a CDMA communication system, the method of improving quality of service (QoS) and increasing traffic capacity wherein the CDMA communication system includes a multiplicity of user data channels, each data channel including quadrature (I, Q) channels and a common multiplexer for the I, Q channels, ~~said the~~ method comprising:

receiving from an external source, a set of chip-synchronous CDMA signals to be transmitted;

selecting, on a chip-by-chip basis, the polarity of the I and Q chips including the multiplexer output baseband signal;

baseband filtering the I, Q channels after constant envelope multiplexing by the multiplexer to produce baseband filtered signals; and

upconverting the baseband filtered signals and broadcasting the upconverted baseband filtered signals at RF.

15. (Currently Amended) A method of multiplexing a plurality of input signals to form a single constant-envelope output signal, the input signals being chip-synchronous, the method comprising:

~~a receiver for receiving from an external source a set~~ plurality of chip-synchronous Code Division Multiple Access (CDMA) signals to be transmitted;

(a) evaluating on a chip-by-chip basis a logic value of the input signals; and

(b) generating a single constant-envelope output signal, a value of the single output signal being based on a function of the logic values of the input signals,

wherein ~~the plurality of input signals are Code Division Multiple Access (CDMA) data streams~~ a multiplexing loss resulting from multiplexing the plurality of input signals is substantially the same for each of the plurality of input signals.

16. (Previously Presented) The method of claim 15, wherein (a) includes converting a logic value of the input signal on a chip to a numeric value.

17. (Previously Presented) The method of claim 15, wherein (b) includes applying multiplicative weighting factors to the numeric values of each chip; summing the weighted numeric values; extracting the algebraic sign of the sum of the weighted numeric values.
18. (Previously Presented) The method of claim 17, wherein the weighting factors are determined by the commanded power distribution.
19. (Previously Presented) The method of claim 18, wherein the weighting factors are pre-computed and tabulated.
20. (Previously Presented) The method of claim 18, wherein the weighting factors are computed in real time.
21. (Previously Presented) The method of claim 17, wherein the weighting factors are constant over a power control interval.
22. (Previously Presented) The method of claim 17, wherein the weighting factors vary within the power control interval according to a predetermined pattern.
23. (Previously Presented) The method of claim 22, wherein the predetermined pattern realizes a power distribution.
24. (Previously Presented) The method of claim 15, wherein the input signals being classified in one of a first group and a second group based on a power allocation associated with the plurality of signals; and  
the method further comprising:  
determining weighting factors of input signals in the first group; and

determining weighting factors of input signals in the second group in a manner different from the first group.

25. (Previously Presented) The method of claim 24, wherein the weighting factors of the signals in the first and the second groups are equal.

26. Canceled.

27. Canceled.

28. (Currently Amended) An apparatus for multiplexing a plurality of input signals to form a single constant-envelope output signal, the input signals being chip-synchronous, the apparatus comprising:

a logic unit receiving the plurality of input signals; and

a signal generator generating a single constant-envelope output composite signal based on a function of the plurality of input signals,

wherein the plurality of input signals are Code Division Multiple Access (CDMA) data streams and a multiplexing loss resulting from multiplexing the plurality of input signals is substantially the same for each of the plurality of input signals.

29. (Previously Presented) The apparatus of claim 28, wherein the logic unit weights values of the plurality of input signals to form weighted signal values, sums the weighted signal values to form a weighted sum, and sets a value of the single constant-envelope output signal in accordance with an arithmetic sign of the weighted sum.

30. (Previously Presented) The apparatus of claim 28, wherein the logic unit weights the values of the plurality of input signals in accordance with a power allocation associated with the plurality of input signals.

31. (Previously Presented) The apparatus of claim 29, wherein the logic unit determines weighting factors used to weight the values of the plurality of input signals each time the power allocation changes.

32. (Previously Presented) The apparatus of claim 28, wherein the logic unit classifies each of the plurality of input signals into one of a first group and a second group based on a power allocation associated with the plurality of input signals, determines weighting factors of signals in the first group; and determines weighting coefficients of signals in the second group in a manner different from the first group.

33. (Currently Amended) The apparatus of ~~claim 28~~ claim 32, wherein the weighting factors of the first and second ~~groups~~ groups are equal.

34. Canceled.

35. Canceled.

36. (Currently Amended) An apparatus for multiplexing a plurality of input signals to form a single constant-envelope output signal, comprising:

means for generating the plurality of input signals; and

means for generating a single constant-envelope output signal based on a weighted sum of the logic values of a plurality of input signals,

wherein the plurality of input signals are Code Division Multiple Access (CDMA) data streams.

37. (Currently Amended) The apparatus of claim 36, wherein the means for generating a single constant-envelope output signal includes

means for weighting values of the plurality of input signals to form weighted signal values;

means for summing the weighted signal values to form a weighted sum; and  
means for setting a value of the single constant-envelope output signal in  
accordance with an arithmetic sign of the weighted sum.

38. (Previously Presented) The apparatus of claim 37, wherein the means for weighting weights the values of the plurality of input signals in accordance with a power allocation associated with the plurality of signals.

39. (Previously Presented) The apparatus of claim 38, wherein the means for weighting determines weighting factors used to weight the values of the plurality of signals each time the power allocation changes.

40. (Previously Presented) The apparatus of claim 36, wherein the means for generating classifies each of the plurality of input signals into one of a first group and a second group based on a power allocation associated with the plurality of input signals, determines weighting factors of signals in the first group; and determines weighting factors of signals in the second group in a manner different from the first group.

41. (Currently Amended) The apparatus of ~~claim 36~~ claim 40, wherein the weighting factors of the first and second ~~groves~~ groups are equal.

42. Canceled.

43. (Previously Presented) The apparatus of claim 36, wherein a multiplexing loss resulting from multiplexing the plurality of input signals is substantially the same for each of the plurality of input signals.

44. (New) The method of claim 15, wherein the multiplexing comprises majority-vote logic processing.



45. (New) The method of claim 28, wherein the multiplexing comprises majority-vote logic processing.

46. (New) The method of claim 36, wherein the multiplexing comprises majority-vote logic processing.